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Project Report

BRITISH COLUMBIA FINANCIAL REVIEW: THE ISSUE OF RESOURCE MANAGEMENT

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Executive Summary—Resource Management

This paper examines natural resource management issues that have a potentially significant impact on the costs and revenues of the provincial government.

It concludes that:

- ▶ Information required to properly manage provincial resources has not always been generated, resulting in some decisions which are not fully informed. The Province will have to incur additional costs to develop adequate resource inventory information.
- ▶ Resource revenues in a number of areas should be reviewed.
- ▶ Forests appear to be harvested at the maximum sustainable level. Industry and government should look carefully at intensive silviculture, higher value added and better integrated resource management.
- ▶ Setting aside lands for urban developments, parks and aboriginal land claims will affect government costs and revenues in a number of ways that should be anticipated.
- ▶ The province's resources are not yet being managed on a fully integrated basis.

The report recommends the development of an integrated resource management strategy including:

- ▶ Developing a long-term resource use/management policy that is adhered to over time.
- ▶ Inventorying resources such as ground water, surface water and forests.
- ▶ More closely monitoring the quality and use of provincial resources.
- ▶ Developing appropriate royalty rates.
- ▶ Generally considering the implications of new initiatives and legislation for the provincial resource base.
- ▶ Considering the implications of resolving aboriginal land claims for resource management issues.

The Issue of Resource Management

A. Description

In this chapter, we discuss the resource management issues that have a potentially significant impact on the costs and revenues of the provincial government. Resource management is a very broad, complex issue. Consequently our review of this issue is limited to identifying some of the key implications for government costs and revenues, and the principal areas of risk for control of the resource base by government.

1. Primary and subsidiary issues

From this perspective, the resource management issue is to determine whether such public management instruments as leases and licences, stumpage, mineral taxes and oil and gas royalties are established so that:

- ▶ The maximum effective yield will be obtained from the utilized resource.
- ▶ Government will receive the maximum revenue consistent with the level of resource utilization established by public policy.
- ▶ The balance of conservation/exploitation objectives is set properly.

Subsidiary issues include:

- ▶ Does the government have sufficient information about the resource?
- ▶ Has government determined the cost and/or revenue impacts of resource alienation (park creation, urban encroachment, land claims, etc.)?
- ▶ Are the government's resource management policies/practices consistent?
- ▶ Is integrated resource management being practised in an adequate manner?

As indicated in Exhibit 1, provincial government natural resource revenues totalled approximately \$1.2 billion in 1990/91, approximately 7.7 per cent of all provincial government revenues that year.

In addition to the direct revenues from resource users, the provincial government collects personal and corporate income taxes, and property taxes from individuals and companies involved in resource extraction/use.

The proper management of British Columbia's natural resources thus has a significant impact on the government's financial position.

Exhibit 1 **Natural resource revenues**

Source	1990/91	1989/90
	(\$ million)	
Petroleum and Natural gas		
• Natural gas royalties	\$ 75	\$ 63
• Petroleum royalties	48	43
• Permits and fees	157	121
	<u>280</u>	<u>227</u>
Minerals	<u>45</u>	<u>73</u>
Forests		
• Timber sales	419	454
• Small Business Forest Enterprise Program	111	147
• Other	79	98
	<u>609</u>	<u>699</u>
Other		
• Water resources	222	236
• Wildlife Act—fees and licences	15	14
	<u>237</u>	<u>250</u>
Total	<u>\$1,171</u>	<u>\$1,249</u>

2. Entities Involved

The issue of resource management directly affects a number of ministries, as follows:

- Ministry of Forests.
 - Tenures.

- Timber sales.
- Silviculture/protection services.
- ▶ Ministry of Energy, Mines & Petroleum Resources.
 - Oil and gas royalties.
 - Mineral royalties.
 - Exploration permits, rights or licenses.
 - Water sales for power generation.
- ▶ Ministry of Environment, Lands and Parks.
 - Water rights.
 - Park development.
 - Recreational fisheries and wildlife.
 - Sustainable Environment Fund.
- ▶ Ministry of Agriculture, Fisheries and Food.
 - Agricultural Land Reserve.
 - Commercial fisheries/aquaculture.
- ▶ Ministry of Aboriginal Affairs.
 - Land claims.
 - Control of resources.

A number of other ministries (e.g., Tourism and Culture) have an interest in resource management because their areas of jurisdiction and/or programs are affected by government policies/practices with respect to resource management.

3. Related Issues

There are three related issues, for which separate reports are being prepared, namely:

- ▶ **Forecasts.** The accuracy of expenditure/revenue forecasts depends on the ability to forecast levels of resource use, market prices for resources

and the impacts of other policies such as resource alienation (park creation, etc.).

- ▶ **Revenue collection.** A thorough revenue collection process involves identification of revenue-generating opportunities, establishment of appropriate rates (given all relevant government objectives), development of revenue forecasts and a mechanism to recover all revenues owed.
- ▶ **Environment costs/issues.** Government policies on environmental protection/sustainability and resource conservation affect the revenues and costs related to resource management.

B. Government policies and practices

Government policy in the area of resource management largely mirrors and is extensively integrated with environmental policy. This is illustrated by the following:

- ▶ **Guiding environmental principles for the Ministry of Environment, Lands and Parks.**
 - "Decisions on resource use and economic development must integrate the consideration of environmental impacts."
 - "Our approach to economic development must be compatible with maintaining a sound environment. The emphasis should be on sustained economic prosperity that does not permanently reduce or damage natural assets. As well, we should concentrate more on intensively managing the resources we have already exploited."
- ▶ **Ministry of Energy Mines and Petroleum Resources—Business Plan—July 1991.**
 - "The foundation has been laid for a less vulnerable, more efficient and environmentally sustainable energy future for British Columbia."
 - "The Ministry will integrate economic and environmental values in decision-making through the adoption of programs and policies which improve our economy, expand British Columbia's resource-base, encourage conservation and reduce waste."
- ▶ **Ministry of Forests.**
 - "The purpose of the Integrated Resource Management Program is to ensure that all resource values are considered in the ministry's management of British Columbia's forests and range lands".

- "Ensure that the creation of jobs in the forest sector does not cause greater job loss in other sectors and that any environmental impacts are assessed, and considered."

The recurring themes in these and other pronouncements of governments goals, policies and programs with respect to resource management are:

- Sustainable development.
- Integrated resource use/management.
- Public involvement in decision-making.

Sustainable development urges a blending of economic development and environmental preservation. It has been a major consideration in the development of resource use and environmental policies since the 1987 report of the United Nations Brundtland Commission.

In early 1990, British Columbia established a provincial Round Table to advise on how to promote the concept of sustainable development. The creation of the Sustainable Environment Fund is a further indication of government acceptance of this management philosophy.

Integrated resource use/management has been a consideration in government programs and policies for a number of years. The Environment and Land Use Committee Secretariat (ELUC) addressed this topic in the "**Guidelines for Benefit-Cost Analysis**" (published in June 1977) under the heading "Project Evaluation in the Context of Multiple Objectives".

Integrated resource management involves managing access to and use of the resource such that a diversity of potential users (e.g., loggers, recreationists, ranchers and wildlife) can co-use the resource. Integrated resource management requires that representatives of the users jointly participate in the resource management process.

Public involvement is becoming much more prevalent in decision-making processes regarding resource use and management. Formal public reviews of major projects, community hearings on resource development plans and commissions of enquiry (e.g., Forest Resource Commission) are becoming extremely common in British Columbia and elsewhere.

Government policy and practice with respect to resource management is being developed within the framework of sustainability, integrated management and public involvement.

C. Basis of assessment

Our primary basis of assessment was to determine the type and magnitude of resource management issues that could have a material impact on present or future revenues and expenditures of the government. We also compared resource management practices against stated policies and objectives.

D. Analysis

We conducted interviews with each of the entities that have substantial involvement in resource management issues. We further reviewed recent reports of the Auditor General, written documents (business plans, policy statements, annual reports, etc.) from each entity and written responses to some of our questions.

Given the scope of this issue, we were not able to conduct a detailed analysis of each of the subsidiary issues. Rather, we sought a basic understanding of the parameters and relative implications of each subsidiary issue.

E. Findings and conclusions

1. Inadequate information is available to properly manage our resources

The general consensus of opinion from the Ministry of Forests, Ministry of Environment, Lands and Parks, and Ministry of Energy, Mines and Petroleum Resources is that insufficient information is available about B.C. resources to manage them in the most effective manner possible. Notwithstanding this consensus, the ministries appear to do an adequate job of managing the resources given the information available, and are working diligently to develop better data collection processes and databases.

The effective management of natural resources requires information on a number of matters including:

- ▶ Quantity.
- ▶ Quality.
- ▶ Location.
- ▶ Ease of access.
- ▶ Users.
- ▶ Rate of use.
- ▶ Harvesting/extraction/processing costs.

- ▶ Markets (prices, demand, location).

Without this information, the province as the steward of the resources, may not be making the best decisions about their use.

The Ministry of Forests made a number of interesting responses to questions on resource management, including:

- ▶ "In terms of completeness, the current government inventories are inadequate."
- ▶ "Within the Ministry of Forests, the inventories of the recreation and range resources are generally incomplete to non-existent."
- ▶ "The inventory is adequate for this job [estimating standing timber volumes over extensive areas]. Today however, we require more information on smaller areas. As a result, our current inventory of the forest cover cannot support many integrated resource management planning applications."
- ▶ "Ten years will be required to inventory the province to these new [Forest Resource Inventory Committee] standards."

The Ministry of Environment, Lands and Parks notes that OECD standards for monitoring water resources in lesser developed countries would require the installation of about 3,000 stream monitoring stations in British Columbia. These standards assume very simple hydrological features. With B.C.'s complex hydrological features, even more monitoring stations would be required. At the present time, B.C. has about 600 stream-gauging stations, 140 monitored wells and 130 snow survey locations.

While the number of snow survey locations is considered to be adequate, the number of stream-gauging stations and monitored wells is not. There are currently water licences on about 25,000 streams in B.C. The 600 stream-gauging stations would thus appear to be inadequate. Similarly the number of monitored wells would appear to be inadequate if the Ministry proceeds with:

- ▶ Licensing groundwater usage.
- ▶ Monitoring groundwater quality.
- ▶ Determining sustainable levels of use of groundwater.

The Ministry of Energy, Mines and Petroleum Resources admits that for petroleum resources our resource base information is not as good as that of Alberta. The

result is a lower level of reliability in our forecasting of reserves, costs of extractions and revenues.

The principal implications of the overall lack of adequate resource base information are as follows:

- ▶ The province is not making fully informed decisions about resource use.
- ▶ The province may have difficulty determining the revenue and/or cost implications of resource alienation, such as park creation and land claim settlements.
- ▶ The province will have a difficult time dealing with public issues, such as management of old growth forest resources, when adequate information about these resources is not available.
- ▶ The province will have to incur additional costs to develop adequate resource base information.
 - Ministry of Environment, Lands and Parks requires an additional 90 FTEs in regional offices to manage water resources.
 - The comprehensive inventories proposed by the Forest Resources Commission, if implemented, would require a doubling of government expenditures on inventories from about \$35 million currently to \$75 million annually. Optimal future resource management will require a large future investment.

2. Our forests are being harvested at the maximum sustainable level

Long-term sustainability is an issue with all renewable resources (forests, water, fish and wildlife), and is a very public issue, particularly with forests. Sustainability is also an issue where there are a number of misconceptions about how maximum harvesting levels are determined, such as with British Columbia's forests.

The annual allowable cut (AAC) of the forest resource is determined by a number of factors, including:

- ▶ The standing inventory (including old growth).
- ▶ The resource rotation cycle (average time to regenerate the resource).
- ▶ Current silvicultural techniques.
- ▶ Competing demands.
- ▶ Withdrawals from the resource base.

The Ministry of Forests believes that the calculation of the AAC is conservative in that possible gains from intensive forest management are not counted until the practices are in place. This is counter balanced, however, by longer-term changes in land base.

The principal factor which controls the balance between present and future harvests is the policy under which standing inventories of mature timber are utilized. The standing inventory allows current harvests to be elevated above long-run sustainable levels as the forest is gradually brought to a state where annual production (growth) is in balance with annual harvest. This transition is commonly known as 'fall-down', and could result in a 20 to 30 percent reduction in AAC if more intensive silvicultural techniques are not employed. The fact that 'fall-down' will occur does not necessarily mean that our forests are being overcut. It reflects a government policy which allows the cutting of standing inventory, some of which is old growth, which will ultimately be replaced by forests with a shorter rotation cycle.

Current harvest levels are below AAC levels due to market conditions for lumber, pulp and paper. Once markets pick up, however, harvesting activities should return to a level approximating the AAC. With very little room for expansion, in terms of the volume of wood being cut, government and industry should carefully look at a number of opportunities and threats, including:

- ▶ Practising more intensive silvicultural techniques.
- ▶ Finding the highest and best use of the wood that is harvested.
- ▶ Looking at the implications (revenues, costs, taxes, employment, etc.) of withdrawal of lands from the forest resource base.
- ▶ Finding ways to integrate forest harvesting activities with the many other demands being placed on the forest resource.

3. Resource revenues should be reviewed

Our analysis indicates that government receives significant revenue consistent with the level of resource utilization established by public policy, with a few exceptions. Rates are generally set to recover government costs, and in some cases reflect the appropriate economic rent of the resource.

The rate determination processes for oil, natural gas, minerals and timber include consideration of market conditions. For example, the Ministry of Forests states that the intent of the current stumpage system is "to ensure fair dollar return to the people from British Columbia's major public resource and at the same time, establish a fair and equitable pricing system for timber, sensitive to market fluctuations, production costs and the value of products produced."

Based upon our review with respect to revenue maximization and pricing policy, we suggest that the government should consider the following actions after appropriate further study:

- ▶ Groundwater usage should be licensed and subject to fees.
- ▶ Surface water users (with the exception of power generators) do not pay fees sufficient to cover the costs of monitoring the resource.
- ▶ The royalty rates on water and natural gas used to generate electricity are inconsistent.
- ▶ The royalties charged for water used for power generation should be reviewed.

Groundwater usage is not currently licensed, and there is little monitoring of the level of usage or water quality. In order to ensure that groundwater usage occurs at a sustainable rate and that water quality is not compromised, the Ministry of Environment, Lands and Parks believes that an administrative program should be developed and the users should be charged a royalty. We agree that this is important given the semi-renewable nature of the resource and the current lack of information about its status and use.

Surface water users (other than power generators) pay about \$3 million a year to the provincial government for the water they use. The cost of monitoring the use of this resource is about \$11 million a year. The Ministry of Environment, Lands and Parks is proposing to increase the charges for using surface water by 300 per cent over the next few years to reach a state of cost recovery and provide an incentive to conserve water.

One of the inconsistencies in resource royalties relates to the generation of electricity. The royalties on water used to generate electricity are greater than those on natural gas. This is likely the effect of two factors, namely:

- ▶ Royalties on natural gas heavily reflect market conditions, and current market prices for natural gas are low.
- ▶ Royalties on water used to generate power have been tied to B.C. Hydro's average unit electricity rates since 1981, though the royalty rate has been frozen by Order-in-Council since 1985.

The Ministry of Environment, Lands and Parks believes that the water royalty system should be reviewed because:

- ▶ The royalty rate for water (a renewable resource) is lower than that for natural gas (a non-renewable resource).

- ▶ The indexing process for water royalties is deficient with respect to the base year and variability.
- ▶ B.C.'s water royalty rates are the highest in Canada (17 per cent greater than the next highest province and over two times the national average).
- ▶ Smaller power generators, whose water royalty payments represent a greater percentage of total cost, are being harmed. The royalty charged may be greater than the economic rent of the resource.

4. Alienation of resources will affect government costs and revenues

The alienation of resources through withdrawal of lands for parks, wilderness areas, urban development and settlement of aboriginal land claims will affect government costs and revenues in a number of ways, including:

- ▶ Reduction of revenues received through royalties, licences, etc.
- ▶ Compensation to companies/individuals whose livelihood is directly affected.
- ▶ Indirectly, through potential reductions in corporate and personal income tax.

This assumes that alternative economic activity does not occur or generate sufficient revenues to offset the lost revenue, and that government costs are not reduced accordingly.

So far as we know, the provincial government has not calculated the potential cost and revenue implications of future resource alienation and included these in its financial plans. The scope of these impacts can be inferred from past and current events, however, including:

- ▶ The \$37 million paid to Doman Forest Products as compensation for their timber rights on South Moresby Island.
- ▶ The \$27 million in compensation claimed by Casamiro Resource Ltd. for mineral claims lost in Strathcona Provincial Park.
- ▶ The statement by Geddes Resources that they may claim compensation of up to \$1.0 billion if they are not allowed to proceed with development of the Windy Craggy Mine.
- ▶ The agreement between the Province and the Fort Nelson Indian Band that currently gives the Band 50 per cent of the natural gas royalties collected from production on their reserve.



It should be stressed again that we have not considered the value of these claims. The Province should be developing information on potential cost and revenue implications in advance of any decisions that are to be made which will result in alienation of resources.

5. The province's resources are not yet being managed on a fully integrated basis

The process of integrated resource management involves a number of steps, including:

- ▶ Collection of information about the resource and potential co-uses.
- ▶ Assessment of the value of the resource for competing and/or complementary uses.
- ▶ Development of objectives for resource use.
- ▶ Communication of information and objectives.
- ▶ Monitoring and review of resource use.

Our discussions with individual ministries indicate that while integrated resource management is the objective, the practice is that not all individual ministries are fully committed or involved in the process. Some ministries are reluctant to relinquish full control over certain aspects of resource use. Some examples of this problem include:

- ▶ The Ministry of Forests states that while they are required to consider the objectives of other agencies in their plans, the opposite is not the case.
- ▶ The Ministry of Tourism and Culture feels that their interests are often ignored in the development of resource management plans.

The current development of a Provincial Land Use Strategy should result in a greater degree of integrated resource management. The process of developing the land use strategy will bring all parties to the table and encourage acceptance of the concept.

It is important, however, that the Province ensure that all the components of the integrated resource management process operate effectively. To this end, the government must develop a process that formalizes the requirements for successful integrated resource management, from data collection to monitoring and review.

6. Resource management is tied to resource control

An important aspect of resource management is its relationship to control. Government would have a difficult time managing the province's resource base if it did not also have centralized control. There are two aspects of control that need to be reviewed, namely:

- ▶ Intra-governmental fragmentation of control over the land base.
- ▶ Delegation of resource management responsibilities and control to third parties.

The Ministry of Forests is concerned about intra-governmental fragmentation of control over the land base. The Ministry currently has management control over 75 per cent of the provincial land base, which facilitates the development and institution of consistent resource management policies and practices. There are, however, a number of proposals to divide that control into different jurisdictions, including:

- ▶ A recommendation by the Forest Resource Commission to separate commercial and integrated resource management lands.
- ▶ The desire of the Ministry of Environment, Lands and Parks to have areas of wildlife habitat brought under the Ministry's control.

These proposals have the potential to make resource management much more difficult, costly and controversial.

Transfer of resource management responsibilities and control to third parties is foreseeable under a number of scenarios, including:

- ▶ As one of the conditions of the settlement of native land claims.
- ▶ As part of a process of providing for local (community or regional) input into resource management decisions.

The land claims settlement in Alaska is an example of what can happen when control over the resource base is fragmented. In some areas of that State, groups controlling the forest resource apparently gave greater consideration to the monetary aspects of allowing logging on their lands than to the need for proper resource management. The result was a level of harvesting that could not be justified on a long-term basis. Other aboriginal groups, especially in British Columbia, appear to have managed their resource in a more successful fashion.

If control over the resource base changes, the consequences must be addressed through the development of a framework in which consistent resource management decisions can be made in the future.

F. Recommendations

1. Complete resource inventories and databases must be prepared and maintained

The lack of complete, timely information about the province's resources makes management of those resources difficult. Without this information, government will continue to:

- ▶ Lack the ability to make the best decisions on resource use.
- ▶ Experience difficulty in fully implementing integrated resource management.
- ▶ Expose itself to criticism from the public over its policies and actions.

Government should ensure that recommendations of the Forest Resource Inventory Committee are acted upon and applied consistently to all the province's resources.

2. Develop long-term resource use/management policies, and stick to them

From a public perspective, government use/management policies often appear to be incomplete, short-sighted and ad hoc. Government must take the lead in developing comprehensive, long-term resource use/management policies which are consistent with its financial framework. The ongoing development of a provincial land-use strategy and the appointment of Mr. Stephen Owen to review government policy are two positive steps.

The results of these and other processes must be tested to ensure that they reflect comprehensive and long-term solutions, not just "quick fixes".

3. Government must facilitate integrated resource management

Integrated resource management will not occur if there are unresolved impediments to the process or if all affected parties are not involved. Government should ensure that a formal framework is in place to:

- ▶ Exchange information.
- ▶ Communicate and discuss objectives.
- ▶ Evaluate competing demands.
- ▶ Arrive at objective decisions.
- ▶ Monitor the results.

While the Cabinet Committee on Sustainable Development is already involved in this process, a formal, broad working relationship needs to be developed within the affected ministries, as part of the larger process of government-wide planning.

4. A groundwater management program should be implemented

While groundwater monitoring is already undertaken by the Ministry of Environment, Lands and Parks, a comprehensive resource management program is missing. Government should consider implementing such a program, the elements of which would include:

- ▶ Development of a resource inventory.
- ▶ Monitoring of groundwater quality and usage.
- ▶ Development of groundwater use regulations.
- ▶ Institution of fees for groundwater use.

5. A comprehensive surface water management program should be developed

By international standards, British Columbia has a poor surface water monitoring program. As a result, the Province lacks good information about stream flows, water use and water quality. Government should undertake a review of its requirements in this respect and develop a comprehensive surface water management program.

6. Resource royalty rates should be reviewed

The consistency and appropriateness of resource royalties should be reviewed to eliminate anomalies such as that between water and natural gas used for power generation and to ensure that they are calculated on an appropriate basis. Water royalty rates, for example, may need to be revised to reflect the appropriate combination of base year, escalation factor and market adjustments.

7. The cost and revenue implications of resource alienation should be determined

The alienation of resources through development of parks, wilderness areas and ecological preserves, or through the settlement of aboriginal land claims, needs to be addressed through determination of the fiscal effects. Lost revenues, increased costs and/or compensation represent the potential impacts on government finances.

Government decision-making processes could include a provision that these issues be addressed. Otherwise policies could be developed and actions undertaken without consideration of all the appropriate factors.

8. The issue of future resource control should be reviewed

The settlement of aboriginal land claims and involvement of local representatives in resource management decisions can result in loss or fragmentation of control over British Columbia's resources. This issue, including the recognition of overall costs and benefits, should be reviewed with the goal of developing an overall framework for resource management that provides some central supervision and consistency.